

veying their poison are neither so well adapted for this purpose nor in such a perfect connexion with the secretory mucous system as in *Thalassophryne*.

Finally, I have to add that neither *Batrachus* nor *Porichthys* has the spines perforated, and that also in *Thalassophryne* the poison-organ serves merely as a weapon of defence. All the Batrachoids with obtuse teeth on the palate and in the lower jaw feed on Mollusca and Crustaceans.

April 12, 1864.

E. W. H. Holdsworth, Esq., in the Chair.

The Secretary announced the safe arrival by the ship 'La Hogue,' on the previous day, of the living specimen of *Didunculus strigirostris*, presented to the Society by Dr. George Bennett of Sydney, as announced in previous communications of that gentleman to the Society.

By the same vessel several other species of interest had been received, amongst which were an Australian Pelican (*Pelecanus conspicillatus*) and a Top-knot Pigeon (*Lopholæmus antarcticus*), the latter having been presented to the Society by the Acclimatization Society of New South Wales.

In the same vessel had been shipped from Sydney a living example of a rare Parrot from the Feejee Islands—the *Pyrrhulopsis splendens* (*Aprosmictus splendens*, Peale, Cassin, U. S. Expl. Exp. i. p. 237, pl. 20), which had unfortunately died on the passage home.

Mr. Sclater observed that four species of this peculiar group of Parrots had been distinguished by Mr. Cassin, but that he was only acquainted with three of them, namely—

1. *P. personata*, G. R. Gray, which had been twice alive in the Society's Menagerie (see P. Z. S. 1862, p. 141, et P. Z. S. 1848, p. 21, pl. III.). A specimen of this bird in the British Museum had been obtained by Mr. Rayner, the Naturalist of H. M. S. 'Herald,' in the island of Viti Levu, Feejees.

2. *P. splendens*, Cassin, *l. c.*; also, as stated by Mr. Peale, from Viti Levu, or Great Feejee Island.

3. *P. atrigularis*, Peale, easily distinguishable from the last by its black throat; and obtained by Mr. Rayner at Ngau Island, Feejees.

The *P. tabuensis*, Gm., from the island of Tongataboo or Eooa, might probably be different from the two preceding, as also possibly the *P. anna* of authors.

Dr. Crisp exhibited a wax cast of the tongue, larynx, trachea, heart, lungs, and thyroid gland of a young Lion at birth. This ani-

mal, with two others, was born dead at the Gardens about a month since. The cubs were all well-formed, and healthy apparently in every part except the thyroid gland, which was about twenty times its natural size; and Dr. Crisp believed that death was occasioned by pressure upon the recurrent laryngeal nerves *at the time of birth*. The most singular and remarkable circumstance connected with this enlargement of the thyroid gland was the fact that two lionesses whelped on the same day: one had two cubs, and the other one, and the thyroid in all these cubs was equally enlarged; and the same lesion had occurred before, although formerly the most common defect was a malformed palate.

Dr. Crisp said that up to the present time no Lion had been reared at the Gardens, although at Wombwell's and other private menageries a great number attained the adult state. He thought that after the lioness had access to the male she should be entirely secluded from the public gaze, and placed in a suitable den which did not communicate directly with the external air.

Dr. Crisp likewise exhibited an ear of barley, which, with many others, was produced by cutting down oats three times just before they came into ear. The experiment was performed by Mr. Kersy Cooper, of Euston, Suffolk. Although not a zoological specimen, Dr. Crisp thought that it had a most important bearing upon zoology, and especially upon the origin of species; and on this account he brought the matter before the Society.

Mr. Fraser, having visited several Zoological Gardens within the last month, read the following list of specialities which he had observed in them.

THE JARDIN DES PLANTES, PARIS.

<i>Elephas africanus</i> , Cuv. Two very small. <i>Gazella subgutturosa</i> , Güld. White-faced. — <i>arabica</i> , Kemp. <i>Gypaëtus barbatus</i> (Linn.). <i>Vultur auricularis</i> (Daud.).	<i>Vultur occipitalis</i> , Burch. <i>Ramphocelus brasilius</i> (Linn.). <i>Cassicus persicus</i> (Linn.). <i>Garrulus cervicalis</i> . From Al- geria. <i>Siredon humboldtii</i> .
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JARDIN ZOOLOGIQUE D'ACCLIMATATION, PARIS.

<i>Ovis tragelaphus</i> , Linn. <i>Ovis</i> —. Yemen Sheep. <i>Damalis albifrons</i> (Burch.). <i>Catoblepas gnu</i> (Gmel.). <i>Macropus major</i> , Shaw. <i>Cacatus ducorpsii</i> , Homb. et Jacq. <i>Phasianus scæmmeringii</i> , Temm. <i>Cerionis temmuckii</i> (Gray).	<i>Euplocamus prælatus</i> , Bonap. <i>Francolinus perlatus</i> (Gmel.). Siam. <i>Coturnix coromandelica</i> (Gmel.). <i>Crax albertii</i> , Fraser. <i>Casarca rutila</i> (Pall.). — <i>tadornoides</i> , Jard. et Selb. <i>Siredon pisciformis</i> . Mexico.
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THE EMPEROR'S GARDEN AT SCHÖNBRUNN, NEAR VIENNA.

Felis chaus, Güld.
 — *catu*s, Linn. From Slavonia.
Cervus tarandus, Linn.
 — *alces*, Linn. European.
Camelopardalis giraffa (Linn.).
Ovis musimon, Schreb.
Capra beden, Försk.
 — *nubiana*. Arabian Ibex.
Oryx leucoryx (Pall.).
Gazella —. White-faced.

Gazella arabica, Hempr.
Bos brachyceros? (called *Bos caffer*, Sparrm.).
Asinus tæniopus, Heugl.
Conurus cyanolyseos (Mol.).
Ardea comata, Pall.
 — *garzetta*, Linn.
 — *alba*, Linn.
Ibis falcinellus, Temm.
Carbo pygmcæus, Temm. Little Cormorant.

THE NEW ZOOLOGICAL GARDEN, VIENNA.

Oreas canna (Pall.).
Bos grunniens, Linn.
Asinus tæniopus, Heugl.
Spermophilus citillus.

Vultur cinereus, Gmel.
Falco lanarius, Linn.
Cacatua triton (Temm.).
Caccabis saxatilis, Meyen.

THE ZOOLOGICAL GARDENS, ROTTERDAM.

Paradoxurus leucomystax, Gray.
 From Borneo.
Felis temmincki, V. & H. Sumatra. Very fine.
Felis viverrina, Benn. Java.
Ursus japonicus, Schleg. Male and female, very fine.
Cervus equinus, Cuv.
 — *tarandus*, Linn.
Anoa depressicornis.
Bos taurus, Linn., var. Spanish Ox, very fine.
Sus pliciceps, Gray.
Dendrolagus inustus, Müll.
 — *ursinus*, Temm.
Gryx rueppellii.
Anadina erythrocephala, A. Smith.

Psittacus erithacus, Linn. Some twenty in very fine condition: these have been kept without artificial heat for two years, their only protection being shutters at night.
Cacatua citrinocristata, Fraser.
Goura coronata (Linn.).
 — *victorie*, Fraser.
Euplocamus lineatus (Vig.).
Gallus domesticus, Linn. Dyed yellow, green, and blue.
Phasianus sæmmeringii, Temm.
Crocodilus frontatus, Murray.
 About 4 feet long.
Chamæleo —. From Java.

THE ROYAL ZOOLOGICAL GARDENS, DUBLIN.

Cebus —. Black, white whiskers.
Felis leo, Linn. Seven cubs, born April 2, 1864. These gardens have been very successful in breeding and rearing these animals.

Vultur cinereus, Gmel.
Athene passerina (Linn.).
Cacatua —. White crest; blue cere; red eyes.
Tetrapteryx virgo, Vieill.
Chelydra serpentina. Very large.

The following papers were read :—

1. NOTES ON THE UROTRICHUS. BY J. K. LORD, F.Z.S.

UROTRICHUS GINSII, Baird.

Hab. Western side of Cascade Mountains, Sumass Prairie, near Fraser River.

This singular little animal, which appears to be an intermediate link between the Shrew and the Mole, is at present only known as an inhabitant of two parts of the world, widely removed from each other—the one spot being the western slope of the Cascade Mountains in North-west America, the other Japan. There are, as far as I know, but two specimens extant from the Cascade Mountains,—one in the Smithsonian Museum at Washington; the other, a very fine specimen, that I have recently brought home, and which is now in the British Museum. I have carefully compared the Japanese *Urotrichus* with his brother from the western wilds, and can find no difference whatever, either generically or specifically; in shape, size, and colour they are exactly alike.

The *Urotrichus* is of a bluish black when *fresh*, but in the dried specimens sooty brown. The hair is lustrous and where it reflects the light has a hoary appearance, and, like that of the Mole, can be smoothed in either direction. This is a wise and admirable arrangement, as it enables him to back through his underground roads, as well as to go through them head first. His nose or snout is very curious, and much like that of a pig, only that it is lengthened out into a cylindrical tube covered with short thick hairs, and terminating in a naked fleshy kind of bulb or gland; this gland is pierced by two minute holes, which are the nostrils. Each nostril has a little fold of membrane hanging down over it like a shutter, effectually preventing sand and small particles of dust from getting into his nose whilst digging. This curious nasal appendage is to him not only an organ of smell, but also serves the purpose of hands and eyes. His fore feet, as I shall by-and-by show you, are wholly digging-instruments, and, from their peculiar horny character, not in any way adapted to convey the sense of touch. Eyes he has none, and but a very rudimentary form of ear; so that his highly sensitive, moveable nose serves him admirably in the dark tunnels in which his time is passed to feel his way and scent out the lower forms of insect-life on which he principally feeds. Had he eyes, he could not see, for the sunlight never peeps in to cheer his subterranean home; and sound reaches not down to him; but his nose in every way compensates for all apparent deficiencies. His fore feet are, like the Mole's, converted into diggers; the strong scoop-shaped nail, like a small garden-trowel, at the end of each toe enables him to dig with wonderful ease and celerity. The hind feet are shaped into a kind of scraper, by the toe being curiously bent. The length of the hind foot is about two-thirds more than that of the fore or digging hand.

When I come to speak of his habits as differing from the Mole, I shall be able to demonstrate the use of this strange scraper-like form

of hind foot. So far, I have endeavoured to give an outline of his general personal appearance, differing from the Shrew in the peculiar arrangement of his feet, and from the Mole in having a long hairy tail. His nearest relative is the *Condylura* (Star-nosed Mole), whose nose has a fringe of star-shaped processes round its outer edge, about twenty-two in number.

The first and only place I ever met with this strange little fellow was on the Chilukweyuk Prairies. These large grassy openings or prairies are situated near the Fraser river, on the western side of the Cascade Mountains. In the sandy banks on the edge of the Chilukweyuk River and the various little streams winding through the prairie-grass, lives the *Urotrichus*; his subterranean home is a large space or hole excavated like a small cave, and lined with bits of dry grass and leaves. From the central residence roads are tunnelled away, radiating from it like the spokes of a wheel. His tunnels are not like those of the Mole; he never throws up heaps or mounds of earth in order to get rid of the surplus material; he digs as the Mole, but makes open cuttings at short intervals, about four or five inches long.

And now we shall see the use of those curiously formed scraper-like hind feet. As he digs out the tunnel with his trowel-hands, he throws back the earth towards his hind feet. These, from their peculiar shape, enable him to back the dirt out of the hole, using them like two scrapers, only that he *pushes* the dirt instead of pulling it towards him. Having backed the dirt clear of the mouth of the hole, he throws it over the edge of the open cutting. After having dug-in some distance, and finding, I dare say, the labour of backing out rather irksome, he digs up through the ground to the surface, makes another open cutting, and then begins a new hole or tunnel, and disappears into the earth again. When he has gone as far from his dormitory as he deems wise, he again digs up through and clears away the rubbish. This road is now complete; so he goes back again to his central mansion, to begin others at his leisure. It is very difficult to watch the movements and discover the feeding-time and food of an animal that lives almost wholly underground in the daytime; but I am pretty sure these tunnels are made for and used as roadways, or underground trails, for the purpose of hunting. He is a night feeder, and exposed to terrible perils from the various small Carnivora that prowl about like bandits in the dark—Stoats, Weasels, Martins, and Skunks. So to avoid and escape these enemies, he comes quietly along the subterranean roadways, and cautiously emerging at the open cutting, feels about with his wonderful nose, and, I doubt not, guided by an acute sense of smell, pounces upon larvæ, slugs, beetles, or any nocturnal creeping things he can catch, and so, traversing his different hunting-trails during the night, manages in this way to fare sumptuously, safe from danger.

It is scarcely possible to imagine a more skilfully contrived hunting-system, to avoid danger and to facilitate escape, than are these tunnel-trails with open cuttings; for the sly little hunter has, on the slightest alarm, two modes of flight at his disposal, one before and

the other behind; and the fur, as I have already mentioned, lying as smoothly when stroked from tail to head as it does when turned in the natural direction, enables him to retreat tail first into his hole as easily as he could go adopting his usual mode of progression.

2. NOTICE OF A PORTION OF A NEW FORM OF ANIMAL (MYRIOSTEON HIGGINSII), PROBABLY INDICATING A NEW GROUP OF ECHINODERMATA. BY DR. JOHN EDWARD GRAY, F.R.S., F.L.S., ETC.

Four or five years ago the Rev. H. H. Higgins, of Liverpool, purchased in London a specimen which was shown at the time to several naturalists, and was pronounced by some to be the tail of a Ray (perhaps of *Urogymnus africanus*); and this determination seems to have been so far satisfactory that up to this period it has not been further described.

During a recent visit to the Free Museum at Liverpool the specimen attracted my attention, and Mr. Moore, the intelligent Curator of that institution, placed it in my hands for examination and determination; and the trustees of that institution have most kindly presented it to the British Museum. I was soon satisfied that it could not be the tail of a Ray, nor, indeed, a part of any vertebrated animal. The outer surface (and, indeed, the whole substance) is made up of a number of calcareous concretions, united together by anastomosing processes placed on the outside of an internal rather thick coat formed of longitudinal fibres, which is rather hard and firm when dry. The interior of the tapering tube is quite empty, without any septa or other divisions.

It is very unlike the skin of a cartilaginous fish, which is always a good firm skin, more or less studded with hard, imbedded, bony scales or processes, or the case of an *Ostracion*, which is formed of cartilaginous or horny tesseræ. The rounded surface, which has been regarded as the upper surface of the tail, is pierced with two series of small, rather unequal-sized, oblong holes, which look very like irregular ambulacra for the passage of the feet or tentacles of the animal which formed the body, as in the case of the Star-fishes; and yet, at the same time, these holes are very different from the ambulacral pores of those animals, which are always in pairs and surrounded by some special ossicles. Besides the holes on the rounded or upper edge, there are a few similar perforations, but smaller in size, on the sides of the thicker part of the tube.

The entire surface of the external skeleton is cribellated with small pores between the ossicles, as is the case with many *Asteriadae* and *Echinidae*. This porousness of the surface induced one of the naturalists to whom it was shown to suggest that it might be the shell of a gigantic Foraminifer, or the coral of one of the Polyzoa; but this opinion cannot be entertained, as the pores are very unlike the pores of those animals, and the large continuous internal cavity, which has been evidently occupied by some part of a larger animal, is totally opposed to such a theory.

I therefore propose to give it a name, in hopes that it may lead to a more perfect knowledge of the animal, and to characterize it thus:—

MYRIOSTEON, gen. nov.

Body, entire form unknown. The part alone known (fig. 1) is elongate, tapering, straight, rather compressed, rounded above, and flattened beneath; the sides and upper surface formed of convex tetragonal ossicles, united by short radiating branches; with four or five round pores round each ossicle; ossicles of nearly equal size in all parts of the surface.

The lower surface flat (figs. 2, 3, & 5), formed of smooth flat-topped tesserae, which are very close together, forming a nearly continuous surface, with circles of six triangular radiating pores near the margin of each ossicle—the ossicles near the thickest part of the body being the largest, and very gradually diminishing in size towards the top.

The ossicles are all placed on a rather solid, thick, hard internal layer, which is formed of closely intertwined short longitudinal fibres, or opaque bone-like spicula, which seem to give considerable rigidity to the body.

The convex upper edge has two longitudinal series of oblong pores, rather unequal in size, and sometimes placed so close together as to run nearly into one another, and at others separated from each other by a considerable interval. The larger pores are surrounded by a slightly raised edge, showing that some tentacle or other body is emitted through them. There are also a few smaller circular pores scattered on the sides of the tube.

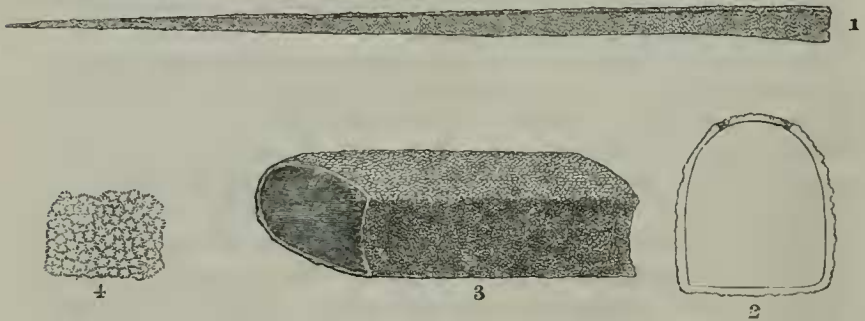


Fig. 1. The entire specimen, greatly reduced.
 2. Cross section of the specimen, natural size.
 3. Side view, showing the flat under surface.
 4. Figure of the surface, natural size.

MYRIOSTEON HIGGINSII, sp. nov. (Figs. 1-5.)

Hab. — ?

The fragment of this animal, which alone is known, is $26\frac{1}{2}$ inches long and 3 inches in circumference at the base, tapering to a rather blunt end, which is pervious; but it is evidently imperfect, and may be closed in the perfect state. The flattened part of the base is rather more than half an inch wide at its widest part.

I have named the specimen after the Rev. H. H. Higgins, one of

the trustees of the Derby Museum at Liverpool, well known for his attachment to science.

I was soon convinced that the specimen was not the tail of a Ray, nor indeed any part of a vertebrated, annulose, or molluscous animal, so that it must belong to the radiated groups; and the question is to which part of the group it is most nearly allied.

The formation of the external skeleton and the general form of the parts which alone have as yet been examined lead me to believe that it is the part of an Echinoderm, being probably the single ray of a radiated body. The structure of the external skeleton resembles more closely that of one of the more tessellated forms of the cylindrical-rayed Starfish than that of any other animal that has occurred to me; but it differs from the arms of these animals in not being provided with regular ambulacra, which is the essential character of the Starfish.

I am therefore induced to believe that the specimen may indicate a new group of radiated animals, nearly allied to *Asterias*. It appears to be much more rigid than the Starfish are in general; and it will at any rate form a new family, for which the name of *Myriosteidæ* may be given.

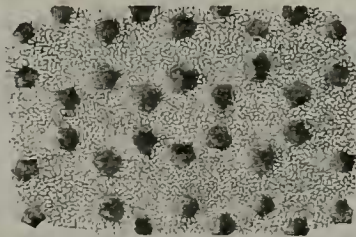
I do not recollect to have seen any fossil that has any resemblance to the specimen, or to the separate parts of it.

The ossicles differ also from those of *Asterias* in not being covered with granules, and from the *Asteriadæ* and *Echinidæ* in not being provided with spines on moveable joints.

The lateral edges of the flat portion of the specimen are more or less distinctly marked, and in some places, especially near the small end, are raised up into an irregular margin, formed by irregularities on the surface of the ossicles, which at these places are more or less confused together.

The centre of the upper part of the smaller end of the specimen is marked with scattered concavities, which appear as if formed by its having been attached to some shell or other more or less convex surface. These concavities are produced by the flattening of the surface of the ossicles of the part. They may have been produced by parasites which have affixed themselves to the surface of the specimen, or by the specimen itself having been attached by the end of this part of the body to some fixed body. The pores on the back are more symmetrical and equal near the end of the arm, and those

Fig. 5.



Magnified figure of the under surface, showing the large pores placed in hexagons.

in each series are generally opposite to each other; but there are many exceptions to this arrangement and symmetry.

The *Myriosteon* can have no affinity to the Polyzoa, for there are no cells for the reception of the animal. The celebrated French zoologist who suggested that it might possibly belong to that order compared it with *Eschara*, the cells of which are obliterated by age; but then the cells are always well developed in the younger part of the coral.

The specimen under examination is clearly not a coral gradually increasing in size by the development of new cells, but a definitely-shaped part of some regularly formed body; so that the idea of its being a Polyzoon is scarcely worthy of as much consideration as I have given to it.

3. ON THE CHANGE OF COLOUR IN THE COMMON TROUT (*SALMO FARIO*). BY EDWARDS CRISP, M.D., F.Z.S., ETC.

During a walking tour over Dartmoor in July last, I was surprised to find that out of a large number of Trout caught many were of a very dark colour, and others of the usual hue, as shown by the drawings which I place before the Society.

The dark-coloured Trout were all taken from dark and deep portions of the stream, whilst those of the normal appearance were in clear water. But a more interesting circumstance connected with these Trout was the nature of their food. I opened the stomach and intestines of more than a hundred, and in a great many I found the *Ephemera* and its larva, caterpillars of moths that had fallen from the bushes that overhung the stream, and a great many click or skip-jack beetles (*Elateridae*), which, as is well known, are the parents of the wire-worm, one of the most destructive insects to our grain and root crops. In the stomachs of some of the Trout as many as six or seven of these beetles were present (as shown in the drawing). I am not aware that this fact has been before noticed, and it serves to show that some fishes, like many members of the feathered creation, play an important part in the destruction of noxious insects.

4. ON TWO NEW SPECIES OF BIRDS FROM NEW GRANADA. BY P. L. SCLATER, M.A., PH.D., F.R.S., SECRETARY TO THE SOCIETY.

In a small series of bird-skins lately received by M. Verreaux, of Paris, from Bogota, and submitted to my examination, are two specimens which I consider to belong to species not hitherto characterized. These are

1. *BASILEUTERUS CINEREICOLLIS*, sp. nov.

B. olivaceus, pileo nigricante, crista media aurea: subtus flavus, gutture toto et pectore cinereis; lateribus olivaceo-virescentibus: rostro corneo, pedibus pallide brunneis.

Long. tota 5·0, alæ 2·7, caudæ 2·5 poll. Angl.

Hab. In Nova Granada interiore.

Obs. Similis *B. coronato* Tschudii, sed crista flava nec castanea et gula cinerea nec albicante distinguendus.

This *Basileuterus* makes the eighteenth species of this pretty group of *Mniotiltidæ* now in my collection, seventeen having been already registered in my 'Catalogue of American Birds.' I may take this opportunity of remarking that the locality therein attributed to *B. uropygialis* (as also in these 'Proceedings,' 1861, p. 128) is, no doubt, erroneous. Relying on the correctness of M. Verreaux's labels, I have hitherto considered this to be a Brazilian species; but Mr. O. Salvin has recently received specimens of the same bird from Panama, and I have no doubt that that is its correct *patria*.

2. *THRIPOPHAGA GUTTULIGERA*, sp. nov.

Brunnescenti-olivacea, pileo nigricante, dorsi plumis strüs medialibus ochraceis, quasi celatis: alis nigris, rufo limbatis: cauda unicolore castanea: subtus brunnescenti-olivacea, ochraceo crebre guttulata, plumis ochraceis, fusco circumcinctis; gula omnino ochracea: rostro superiore corneo, inferiore flavo; pedibus clare brunneis: subalaribus rufescenti-ochraceis.

Long. tota 5·5, alæ 2·5, caudæ 2·5, tarsi ·75.

Hab. In Nova Granada interiore.

Obs. Aff. *T. striolata* ex Brasilia, sed crassitie multo minore et colore capitis obscuriore.

This little *Dendrocolaptine* might be arranged either as a *Thripophaga* or as a *Heliobletus*, and serves to connect these not very strongly distinguished forms. Its general structure is exactly that of *Thripophaga striolata*, but it is not much larger than the diminutive *Heliobletus superciliosus*. In the latter bird, however, the bill is proportionately rather shorter and straighter.

April 26, 1864.

John Gould, Esq., F.R.S., in the Chair.

The Secretary read the following extract from a letter addressed by George Latimer, Esq., Austrian Consul at Porto Rico, to Lieut.-Col. C. P. Cavan, F.Z.S., and stated in relation thereto that he had obtained the necessary permit from the R. M. Steam Company for the conveyance of a tank from St. Thomas's to Southampton:—

“ St. John's, Porto Rico.

“ As you are a Fellow of the Zoological Society, in whose collection, in their Gardens in the Regent's Park, I know you take great interest, I write to inquire if the Society would like to have a specimen or specimens of the *Manatus* or Manatee, commonly called the 'Sea Cow;' and if so, then for it to obtain a standing order from